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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/263,262	03/05/1999	MASAYUKI YAMADA	862.2720	1577

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EXAMINER

KNEPPER, DAVID D

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 04/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/263,262

Applicant(s)

YAMADA, MASAYUKI

Examiner

David D. Knepper

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9 Dec 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

1. Applicant's correspondence filed on 9 December 2002 (paper #8) has been received and considered. Claims 1-24 are pending.

Specification

2. The change on page 1, lines 11-20 is objected to as new matter. The applicant's previous description admitted as "conventional" prior art the fact that it is well known to concatenate speech elements to include waveforms elements corresponding to "one to several pitches". The applicant is now trying to remove "one" which is not correct. It is well known to utilize a single pitch or multiple pitch values depending on a variety of factors such as the particular words or sentences (for example) that are being formed as well as the length of the particular elements that are being concatenated. Thus, it would be disingenuous for the applicant to rewrite history in such a way that something that has been available to the public might be construed otherwise given that the only criticism that applicant has for a waveform concatenation technique is the limitations imposed by pre-storing a "narrow range" of examples to be used to model prosody.
3. The disclosure is objected to because of the following informalities: In addition to run-on sentences, pages 2-8 contain claim language inappropriate for the body of the specification (see details below). Proper grammar and technical writing practices should be followed to make coherent statements in the specification. Appropriate correction is required.

The change on page 1, line 21 to page 2, line 1 is acceptable since it admits that it is well known to search through speech data using more than one type of prior knowledge including the phonemic context of one or more phonemes or the pitch of the stored data. Thus, it is admitted that speech data is properly formed by selecting the concatenation one or more phonemes. It is also admitted that it is known to select such speech data based on pitch (fundamental frequency).

Use of the selected data in combination will improve speech quality by employing these contextual and prosodic elements.

The change at page 2, line 22 to page 3, line 13 is confusing because: “The search means is the searching the database” is grammatically confusing; “The re-search.” is not a complete sentence; and the last sentence has antecedent problems because of the confusing nature of the earlier sentences in the paragraph. To further prosecution, this material is presumed to represent admitted prior art.

The change at page 3, line 14 to page 4, line 14 does not match the marked-up copy. To further prosecution, this material is presumed to represent admitted prior art.

The change at page 4, line 21 to page 5, line 7 is objected to because “correspondence with these cond or third phoneme.” does not make sense. To further prosecution, this material is presumed to represent admitted prior art.

The change at page 5, line 8 to page 6, line 8 still contains claims language and run-on sentences (in particular, the second sentence).

The change at page 6, line 9 to page 7, line 4 still contains claims language and run-on sentences (in particular, the second sentence).

The change at page 7, line 5 to page 8, line 8 still contains claims language and run-on sentences (in particular, the second and third sentences).

Claims

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-24 are rejected under 35 U.S.C. § 103 as being unpatentable over Kaja (5,659,664) in view of Huang (5,913,193).

Claims 1, 12 and 23:

“Speech synthesis” is taught by Kaja’s speech synthesis, title:

“generating a second phoneme in consideration of a phonemic context for a first phoneme . . . searching said database for a phonemic piece data . . . re-searching said database for phonemic piece data corresponding to the third phoneme” (this is suggested by Kaja’s use of stored parameters used for triphone synthesis, which, by definition, relies on relationships between 3 phonemes (see Huang, col. 1, line 47). As stated in column 2, lines 63-65, Kaja relies upon the interconnection of several phonemes.); and

“registering the search result . . . in a table” (suggested by his matrix, col. 2, line 16 – see Huang who explicitly teaches that his storage relies upon a table of senones stored in HMM storage 24, col. 3, lines 60-65).

It is noted that Kaja does not explicitly teach the use of a “table”. However, he teaches that his data must be stored for searching in a matrix. Huang explicitly teaches the use of a table

as noted above. It would have been obvious for a person having ordinary skill in the pertinent art, at the time the invention was made, to use a table to store the result of searching the stored synthesis parameters because Huang teaches that determining the parameters for storage requires re-estimating the HMM parameters given the speech segmentation and that this will increase the probability of the HMM generating correct parameters. The desirability to generate correct parameters is the reason proper storage in a table is obvious.

Claims 2-24 are rejected under similar arguments as noted above. Utilizing pitch is taught by Kaja's fundamental sound curve, col. 1, line 31 and Huang's mean and variance for pitch, col. 7, line 27. Vowel and consonant combinations are obvious to anyone of ordinary skill in the art and are taught by Kaja in col. 2, lines 65 to col. 3, line 6 as well known triphone combinations. Any combination of 3 phonemes is anticipated by the term of art "triphone".

Claims 8, 19 and 24: "The phoneme as a synthesis target", "the acquired fundamental frequencies" and "phonemic context" is clearly taught by Huang's stream of phonemes is transmitted to prosody engine 35, col. 8, line 19. Furthermore, Huang teaches in col. 8 that the context as determined for phonemes is affected by the proper intonation of a sentence, etc. to create natural sounding speech.

Remarks

6. Applicant's argument on page 19 that Kaja fails to disclose or suggest a "storage means for storing a table" is admittedly false in that the applicant acknowledges that Kaja does teach a matrix for storing polyphones. The applicant's argument that Kaja's polyphones are different than "storing triphones of the present invention" is contradicted by Kaja's preferred embodiment

which uses triphone synthesis (col. 2, line 64).

Applicant's argument on page 19 that Huang fails to disclose the present invention which "manages a database for managing phonemic piece data and an index table having substitute phoneme data with respect to all the conceivable phonemic contexts" contradicts the teachings of Huang in column 3, lines 60-65 noted above which teach the use of a dictionary storage 22 which stores the phonemic description of each word and the HMM storage 24 which contains a table of senones. By definition, a senone is: An equivalence class which models a subphonetic event usually one state in a HMM for a phoneme (different phone models can share the same senone if they exhibit acoustic similarity). Therefore, it is clear that the claimed substitute phoneme data would read on the typical use of senones to allow different phone models to substitute for one another if they exhibit acoustic similarity. HMM's are particularly useful for modeling insertion, deletion and substitution. One of ordinary skill in the art would know that acoustic similarity of different phonemes occurs when they are in a similar context which is why modeling techniques such as described by Huang are used (see columns 5-6 of Huang).

The contextual modeling of Huang (column 8) manages phonemic data and the claims read upon it as combined with Kaja.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any response to this action should be mailed to:

Box AF
Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

TC2600 Fax Center
(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Knepper whose telephone number is (703) 305-9644. The examiner can normally be reached on Monday-Thursday from 07:30 a.m.-6:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold, can be reached on (703) 305-4379.

Any inquiry of a general nature or relating to the status of this application should be directed to customer service whose telephone number is (703) 306-0377.



David D. Knepper
Primary Examiner
Art Unit 2654
April 9, 2003